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State of New Jersey
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF HAZARDOUS SITE MITIGATION
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Anthony J. Farro
Director

09 AUG 1988

Mr. Fred Cataneo
U.S. Environmental Protection Agency
26 Federal Plaza
Room 759
New York, New York 10278

SUBJECT: Comments on the Vineland Chemical Company Site Draft Remedial Investigation Report Union Lake June, 1988

Dear Fred:

Attached you will find specific comments about the report presented in order by page number. However, there are several issues of an important nature that I would like to address at this time.

First, this document does not include a Natural Resource Damage Assessment. The DEP feels this is a critical flaw in as much as Union Lake and its environs are a state designated Wildlife Management Area. Attached please find for your information a brief arsenic report from the US Fish and Wildlife Service and two recent studies concerning the association between arsenic and lake eutrophication, as well as bioaccumulation through the molluscan end of the food chain in Union Lake (comment by T. Belton).

Second, the lake has been lowered in order to repair the dam and all previously recorded levels and distributions of arsenic have probably changed (T. Belton). In addition, the new spillway which is being planned will include not only a fish ladder but high and low level outlet gates allowing outflows at elevations 16 and 11 feet, respectively. The implications of these changes must be considered in the Feasibility Study.

Finally, all comments submitted are based only upon the review of the Union Lake RI, without knowledge of either the Vichem Site or Maurice River RI's. DEP feels that any conclusions/recommendations at this time may be impacted by the study results of the other sub-sites.

VIN 002 1621

In closing, the Risk Assessment is still being reviewed and comments on that will be forthcoming.

Should you have any questions, please call me at (609) 984-0980.

Sincerely,

Thomas J. Cozzi

Thomas J. Cozzi
Site Manager
Bureau of Site Management

HS179/dfh
c: With Attachments
A. Verma, BSM
T. Belton, BSR
A. Marinucci, BEERA
J. Monroe, DWR
R. Engel, DAG
I. Kropp, Superfund Coordinator
C. McCarty, BCR

Page	Paragraph	Comment(s)
Executive Summary -		This section summarizes results presented in main body of the document. This must be updated to incorporate any subsequent changes made to the main text based on the comments contained within this memo.
1	1	The description of the RI related to the investigation of the Blackwater Branch to its confluence with the Maurice River should be clarified to reflect that the main study of the Blackwater Branch will be <u>downstream</u> of the Vineland Chemical Company site, although sampling of upstream portions will be necessary to show any impact of arsenic on the waterway.
2	Last	The risk assessment did not address the risk of infiltration of contaminated lake water on ground water quality, and the additional risk to potable water supplies in the area. If all of the homes and businesses in the vicinity of Union Lake are on a regularly tested public community water supply, this should be made clearer.
4	2	One part of the RI dealing with arsenic in the Maurice River downstream of Union Lake must address the possibility that there are other industries which may discharge wastewaters containing arsenic which eventually enter the Maurice River.
7	2	The statement that the treatment process employed by Vichem has been unable to reduce the discharge to less than 0.7 mg/l should be clarified. It appears from monitoring data of the plant effluent that if the influent arsenic concentration is low, 0.05 mg/l of arsenic in the effluent is achievable. As the arsenic concentration increases, however, treatability by the existing process appears to decrease.
7	3	Also, the current operations include treatment of arsenic contaminated storm water only. Vichem was relieved of its ground water pump and treat obligations by the Department in 1987, and is no longer treating contaminated ground water.
7	4	The statement that ground water from the upper ten feet of the water table is extracted and pumped is misleading. While a small portion of the ground water which moves within this portion of the aquifer was collected by pumping "hotspot" wells and well points, the pumping program in no way controlled the arsenic bearing ground water located

		in the top portion of the water table aquifer. Further, reference to the Vineland Chemical Company's ground water extraction and treatment activities should be in the past tense since the company no longer pumps ground water for treatment.
9	4	Can the location and nature of the deep hole be better defined?
9	5	State whether or not the private residences and yacht club are connected to public water supplies, or if they are serviced by private wells.
13	1	Explain why the range of exposed land area during lake drawdown is such a wide range, 50 - 105 acres.
17	3&4	The bench scale treatability studies were limited by the level of treatment to be attained prior to removal to a landfill. The level of treatment necessary to be attained to enable the materials to be redeposited on site was not described. It should be noted that a total soil arsenic concentration exceeding 20 mg/kg does not mean that the soil would have to be disposed of in a hazardous waste landfill, unless an EP Toxicity test on the soil yielded an arsenic leachate which was greater than or equal to 5 mg/l. Bench scale studies did not appear to generate any information or discussion on the levels of soil arsenic which do not appear to influence the ground water or surface water quality standard for arsenic of 0.05 mg/l. In other words, at what soil concentration of arsenic will a leachate of less than 0.05 mg/l occur which will not impact ground water or surface water.
23	-	Section 2.5. Cultural Resources. Comments concerning the occurrence of historical and prehistorical artifacts should be put in context with the time scale of the creation of Union Lake from the Maurice River.
27	1	It is not known whether Union Lake is a water body which recharges the ground water, or is a water body which is recharged by the ground water. Although it is largely assumed that baseflow in rivers and streams is maintained by the recharge of ground water this has not been shown. If it turned out that the contaminated lake waters recharged the ground water, an additional exposure pathway could warrant investigation.

28	2	The time frame related to the arsenic concentration values presented should be given.
29	2	Arsenic can also be taken up by plants and subsequently ingested by animals. This should be included in Paragraph 2.
30	1	The first full paragraph, there is something wrong in the last sentence after the second comma.
53	Last	Were other samplers considered in order to obtain soil samples at depths greater than 1 foot for current comparisons of shallow and deeper arsenic sediment concentrations?
58		Table, Surface samples collected in August 1986, had a maximum value of arsenic of 1237 mg/kg, not the 635 mg/kg report. Have this corrected.
69		Section 4.3. It is agreed that sediment data are variable and this is to be expected. However, some trends are observable in the data and EBASCO should point out these trends. Areas on which to focus are as follows: a) Majority of samples have between 80-100% sand. Thus few samples are affected by organic matter. b) A majority of the Samples Positive for Arsenic are between 50-100 ppm. c) Arsenic seems to be higher in upstream sections of lake. Are these areas associated with low current flow, high silt and clay or high organic matter? d) Though Variable, arsenic is concentrated in discrete areas within the Lake.
Section 4.3		Can volumes of arsenic contaminated sediment be estimated from concentration? If so, have Ebasco perform this calculation, so that we can estimate the maximum volume that may need remediation.
72	3	Paragraph 3 states that the pool elevation of Union Lake will be lowered by 5 feet, and is stated in other locations to be lowered to 8 or 9 feet. Please clarify.
77	Last	The objectives of the studies were the treatment of the soils to a level that could then be landfilled as nonhazardous waste. The objectives should have been expanded to determine the level

at which the soils cease to be a threat to surface water uses and ground water uses, as well as the level at which arsenic bearing soils are no longer an increased risk through soil inhalation and/or ingestion.

Is it representative of Union Lake to sample sediments from the unlined lagoon soils on the Vichem site and the sediments from the Blackwater Branch for the treatability studies? Would any differences in the percentage of sand, silt or clay and organic matter in Union Lake sediments affect the results and costs of either study, fixation or leachability?

81	Last	Sediments remediated to 20 mg/kg arsenic would be considered no longer contaminated based on NJDEP action levels and may possibly be left in place.
81	Last	The reference to ECRA should be N.J.AC. 7:26B-1 et seq.
82	1	With respect to the study of leachability, was the management (treatment and disposal) of the leachate considered and included in the cost/cubic yard of contaminated sediments.
82	2	Clarify which exposure pathway is considered for the carcinogenic risk of sediments - inhalation, ingestion?

Treatability Study Two comments:

a) In illustrating Treatability Results (Table 6-2) put initial arsenic concentration in same column as Treatment Results. Otherwise it is difficult for reader to make comparisons.

b) Determine effect of arsenic concentration on extraction techniques, thus determine whether extraction is a first or second order function.

97	1	The first "bullet," the reference should be N.J.A.C. 7:14A-6.15(e)2.
97	2	Ground water should be included in a exposure assessment along with determining if ground water recharges the lake or if the lake recharges the ground water. This aspect has not been adequately investigated to determine if it should be included in the risk assessment.

125	7	Reference should be made in Paragraph 7 if residences are on public or private water supplies, and the threat to them from Union Lake sediment and water contamination by assessing the risk to ground water supplies.